AMENDMENT TO THE CLAIMS

1. (Currently amended) A process analytic system comprising:

a device for sensing a concentration of a combustible ~~specie~~ species of interest ~~,~~ in an exhaust stream;

a controller coupled to the device and configured to receive measurements of the concentration of the combustible species; and

a blowback system coupled to the device and the controller, the blowback system being configured to responsively reverse gas flow through the device;

wherein the device ~~including~~ comprises:

a holder;

a first RTD disposed in a first cover, wherein the first cover is mounted to the holder;

a second RTD disposed in a second cover, wherein the second cover is mounted to the holder; and

wherein the first cover comprises a catalyst thereon which has a higher catalytic activity to the ~~specie~~ species of interest than the second cover, at a catalytic activity rate that is resistant to change as a function of elevated temperature or the presence of sulfur.

2. (Original) The device of claim 1 wherein the first cover is formed from a tube.

3. (Original) The device of claim 1 wherein the second cover is formed as a tube.

4. (Currently amended) The device of claim 1 wherein the catalyst is disposed on the first cover ~~has~~ as a ~~catalyst~~ film ~~disposed thereon~~.

5. (Currently amended) The device of claim ~~4~~ 1 wherein the ~~film is metal~~ catalyst comprises doped lanthanum manganite.

6. (Currently amended) The device of claim ~~5~~ 1 wherein the ~~metal is platinum~~ catalyst comprises doped ceria.

7. (Canceled)

8. (Currently amended) The device of claim ~~4~~ 1 wherein the ~~film is a~~ catalyst comprises perovskite.

9. (Currently amended) The device of claim ~~4~~ 1 wherein the ~~film is~~ catalyst comprises hopcalite.

10. (Original) The device of claim 1 wherein the second cover is constructed from a catalyst-free stainless steel tube.

11. (Original) The device of claim 1 wherein at least one of the first and second cover is joined to the holder using thermally insulative material.

12. (Original) The device of claim 11 wherein the thermally insulative material is selected from the group of ceramic cement, adhesive, and high-temperature epoxy.

13. (Currently amended) A process analytic system comprising:

a device configured for determining a concentration of a combustible ~~specie~~ species of interest in an exhaust stream; ~~,~~

a controller coupled to the device and configured to receive measurements of the concentration of the combustible species; and

a blowback system coupled to the device and the controller, the blowback system being configured to responsively reverse gas flow through the device;

wherein the device ~~including~~ comprises:

a solid electrolyte;

a reference electrode that is inactive to the combustion reaction; and

a working electrode that is catalytically active to the combustion reaction, ~~and~~ wherein the working electrode and the reference electrode are coupled to the solid electrolyte and are adapted for resistance to elevated temperature and to the presence of sulfur.

14. (Original) The device of claim 13 wherein the reference and working electrodes are couplable to the exhaust stream.

15. (Original) The device of claim 13 wherein the solid electrolyte is selected from the group consisting of doped zirconia, ceria, and bismuth oxide.

16. (Original) The device of claim 13 wherein the reference electrode is constructed from gold.

17. (Original) The device of claim 13 wherein the reference electrode is constructed from doped lanthanoid chromite.

18. (Original) The device of claim 13 wherein the working electrode is constructed from platinum.

19. (Original) The device of claim 13 wherein the working electrode is constructed from a metal oxide.

20. (Currently amended) The device of claim ~~19~~ 13 wherein the working electrode ~~film~~ is constructed using doped ceria.

21. (Currently amended) The device of claim ~~19~~ 13 wherein the working electrode ~~film~~ is constructed using doped lanthanum manganite.

22. (Currently amended) The device of claim ~~19~~ 13 wherein the working electrode ~~film~~ is constructed using a perovskite.

23. (Currently amended) A process analytic system comprising:

a solid state device for determining the concentration of oxygen in a gas phase: ~~,~~

a controller coupled to the solid state device and configured to receive measurements of the concentration of the oxygen; and

a blowback system coupled to the solid state device and the controller, the blowback system being configured to responsively reverse gas flow through the solid state device;

wherein the solid state device ~~comprising~~ comprises:

a solid electrolyte;

a reference electrode coupled to the solid electrolyte; and

a working electrode constructed from a mixed ion/electron conducting oxide, wherein the working electrode is coupled to the solid electrolyte and is adapted for resistance to ambient sulfur and to elevated temperature.

24. (Original) The device of claim 23 wherein the solid electrolyte is selected from the group consisting of doped zirconia and ceria.

25. (Original) The device of claim 23 wherein the reference electrode is constructed from the group consisting of platinum, a metal oxide electrode, and a mixed conducting electrode.

26. (Original) The device of claim 25 wherein the metal oxide electrode includes perovskite structure.

27. (Original) The device of claim 25 wherein the metal oxide electrode includes oxide with fluorite structure.

28. (Original) The device of claim 23 wherein the working electrode is constructed from ceria or its solid solution doped with at least one mixed valency element.

29. (Original) The device of claim 28 wherein the mixed valency element is one of terbium and praseodymium.

30. (Currently amended) The device of claim 23 wherein the working electrode is constructed from a ~~solid solution of ceria doped with at least on mixed valency element~~ doped lanthanum manganite.

31. (Canceled)

32. (Original) A process analytic system comprising:

a sample probe having at least one sulfur-resistant sensor disposed therein;

a controller coupled to the sample probe to measure a parameter of an exhaust stream; and

a blowback system coupled to the sample probe and the controller to responsively reverse gas flow through the sample probe.

33. (Original) The system of claim 32, wherein the sample probe includes a plurality of sulfur-resistant sensors.

34. (Original) The system of claim 32, wherein the sensor is an oxygen sensor.

35. (Original) The system of claim 32, wherein the sensor is a combustibles sensor.

36. (Original) The system of claim 32, wherein the sample probe includes a particulate filtering enclosure.